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(FILE 'HOME' ENTERED AT 09:36:29 ON 13 OCT 2004)

FILE 'BIOSIS, CAPLUS, EMBASE, MEDLINE, CANCERLIT, JAPIO' ENTERED AT  
09:37:01 ON 13 OCT 2004

L1 0 S (PA? CELLS)AND ZP3  
L2 74 S (HUMAN CELL) AND ZP3  
L3 18 S L2 AND RECOMBIN?  
L4 15 DUPLICATE REMOVE L3 (3 DUPLICATES REMOVED)  
L5 25947 S (HUMAN CELL LINE)  
L6 21 S L5 AND ZP3?  
L7 11 DUPLICATE REMOVE L6 (10 DUPLICATES REMOVED)  
L8 0 S L7 NOT L6

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updated Search  
W/COOK 10/13/04

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AN 1995:107296 BIOSIS

DN PREV199598121596

TI Mapping the mouse **ZP3** combining site for sperm by exon swapping  
and site-directed mutagenesis.

AU Kinloch, Ross A.; Sakai, Yutaka; Wassarman, Paul M. [Reprint author]

CS Roche Inst. Mol. Biol., Roche Res. Cent., Nutley, NJ 07110, USA

SO Proceedings of the National Academy of Sciences of the United States of  
America, (1995) Vol. 92, No. 1, pp. 263-267.

CODEN: PNASA6. ISSN: 0027-8424.

DT Article

LA English

ED Entered STN: 13 Mar 1995

Last Updated on STN: 13 Mar 1995

AB During fertilization in mice, sperm bind to mouse **ZP3** (mZP3), a  
M-r apprxeq 83,000 glycoprotein present in the ovulated egg extracellular  
coat, or zona pellucida. Sperm recognize and bind to specific  
serine/threonine-linked (O-linked) oligosaccharides present at the mZP3  
combining site for sperm. Binding to mZP3 induces sperm to undergo a form  
of exocytosis, the acrosome reaction. To map the mZP3 combining site for  
sperm, we examined the effect of exon swapping and site-directed  
mutagenesis on the glycoprotein's two activities, sperm binding and  
induction of the acrosome reaction. Stably transfected embryonal  
carcinoma **cell** lines were established that synthesized  
recombinant glycoproteins and secreted them into the culture medium. The  
glycoproteins were partially purified from culture medium and assayed for  
sperm-binding and acrosome reaction-inducing activities. Results of these  
assays suggest that **glycosylation** of one or more of five serine  
residues, clustered together in a polypeptide region encoded by mZP3 gene  
exon 7, is required for activity. Interestingly, this polypeptide region  
exhibits considerable sequence divergence during evolution and may be  
related to the proposed role for oligosaccharides in species-specific  
gamete adhesion during mammalian fertilization.

CC Genetics - Animal 03506

Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Carbohydrates 10068

Reproductive system - Physiology and biochemistry 16504

Development and Embryology - General and descriptive 25502

IT Major Concepts

Development; Genetics; Reproductive System (Reproduction)

IT Miscellaneous Descriptors

ACROSOME REACTION; FERTILIZATION; GAMETE ADHESION; ZONA PELLUCIDA

ORGN Classifier

Muridae 86375

Super Taxa

Rodentia; Mammalia; Vertebrata; Chordata; Animalia

Organism Name

Muridae

Taxa Notes

Animals, Chordates, Mammals, Nonhuman Vertebrates, Nonhuman Mammals,  
Rodents, Vertebrates

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STN

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AN 1993:438886 BIOSIS

DN PREV199396093511

TI Identification of porcine oocyte 55 kDa alpha and beta proteins within the zona pellucida glycoprotein families indicates that oocyte sperm receptor activity is associated with different zona pellucida proteins in different mammalian species.

AU Toepfer-Petersen, Edda [Reprint author]; Mann, Karlheinz; Calvete, Juan Jose

CS Inst. Reproduktionsmed., Tieraerztliche Hochschule Hannover, Buenteweg 15, D-30559 Hannover, Germany

SO Biological Chemistry Hoppe-Seyler, (1993) Vol. 374, No. 7, pp. 411-417. CODEN: BCHSEI. ISSN: 0177-3593.

DT Article

LA English

ED Entered STN: 22 Sep 1993

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AB Porcine zona pellucida (pZP) glycoprotein 55 kDa is composed of two core polypeptides, denominated alpha and beta. Sperm receptor activity has been shown to be associated with the oligosaccharide structures attached to the pZP55-alpha component. Here, we report a simple one-step HPLC procedure for the isolation of the alpha- and beta-components of the 55 kDa pZP proteins after enzymatic partial deglycosylation. N-Terminal sequence and protein chemical analysis of native proteins and of internal peptides from the alpha and the beta forms has established their homology with the rabbit 55 kDa zona pellucida glycoprotein and mouse **ZP3**, respectively. This, in turn, is relevant for a standardization of the ZP nomenclature in mammalian species. Moreover, our results imply that the sperm receptor activity in diverse mammalian species reside on oligosaccharide chains attached to nonhomologous zona pellucida glycoproteins. We hypothesize that acquisition of species-specific activity on the oocyte zona pellucida may thus be related to a species-specific **glycosylation** process.

CC General biology - Taxonomy, nomenclature and terminology 00504

Cytology - Animal 02506

Comparative biochemistry 10010

Biochemistry studies - Proteins, peptides and amino acids 10064

Biochemistry studies - Carbohydrates 10068

Biophysics - Molecular properties and macromolecules 10506

Biophysics - Membrane phenomena 10508

Reproductive system - Physiology and biochemistry 16504

Development and Embryology - General and descriptive 25502

IT Major Concepts

Biochemistry and Molecular Biophysics; **Cell** Biology;

Development; General Life Studies; Membranes (**Cell** Biology);

Reproductive System (Reproduction)

IT Miscellaneous Descriptors

AGGRESSION; ESTROGEN; INFANT CARE; LUTEINIZING HORMONE; OVARIAN

ACTIVITY; PARTURITION; SCENT MARKING; SOCIAL BEHAVIOR

ORGN Classifier

Leporidae 86040

Super Taxa

Lagomorpha; Mammalia; Vertebrata; Chordata; Animalia

Organism Name

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Taxa Notes

Animals, Chordates, Lagomorphs, Mammals, Nonhuman Vertebrates, Nonhuman

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Rodents, Vertebrates

ORGN Classifier

Suidae 85740

Super Taxa

Artiodactyla; Mammalia; Vertebrata; Chordata; Animalia

Organism Name

Suidae

Taxa Notes

Animals, Artiodactyls, Chordates, Mammals, Nonhuman Vertebrates,  
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ORGN Classifier

Suidae 85740

Super Taxa

Artiodactyla; Mammalia; Vertebrata; Chordata; Animalia

Organism Name

Suidae

Taxa Notes

Animals, Artiodactyls, Chordates, Mammals, Nonhuman Vertebrates,  
Nonhuman Mammals, Vertebrates